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## INTEGRATED HEALTH POST FOR CHILD HEALTH (*POSYANDU*) AS A COMMUNITY-BASED PROGRAM IN INDONESIA: AN EXPLORATORY STUDY

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### Abstract

*Integrated Health Post for Child Health (Posyandu) has been endorsed since 1984 as a community-based health program in Indonesia. Despite its potential in improving child health outcomes, evidence related to its current implementation is lacking. This study aimed to explore the current implementation of posyandu in the country. Data of 638 posyandu surveyed in the 5<sup>th</sup> wave of Indonesia Family Life Survey (IFLS-5) located in urban and rural areas were analyzed, applying chi-square and independent t-test method. Posyandu surveyed run a number of activities (mean type of activities=8.1 in rural vs. 7.4 in urban areas,  $p<0.001$ ), focusing on weight monitoring, supplementary food provision, and vitamin A supplementation. Approximately 38% of Community Health Workers (CHWs) has never been trained in posyandu's management nor child health care. Financial barriers, medicine and equipment supplies, and location to conduct posyandu's activities remained as challenges in the implementation. While posyandu has been implemented for decades, the study found that its implementation has not been optimal. Actions should be taken to improve posyandu's implementation. These include strengthening collaboration to address the problems and improving CHWs activities.*

**Keywords:** *posyandu, child health, community-based health program*

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### Introduction

In the past decades, child and infant health status in Indonesia have been improved significantly. As one of the development indicators, infant mortality rate (IMR) in Indonesia has declined significantly from 68 per 1,000 live births (1987-1991) to 32 per 1,000 live births (2008-2012) (Statistics Indonesia Badan Pusat Statistik), National Population and Family Planning Board (BKKBN), Kementerian Kesehatan Indonesia, Measure DHS, & ICF International, 2013). World Bank estimated that the IMR in 2015 was 23 per 1,000 live births (The World Bank, 2016), meeting the target of MDGs IMR goal for Indonesia. Despite of this achievement, there are inequalities in child health status between subgroup of population.

A number of socioeconomic, environmental and biological factors are associated with infant

and child health status. Socioeconomic factors operate through the proximate determinants in affecting mortality. These proximate determinants that directly affect child and infant mortality in developing countries include maternal characteristics (age, parity, birth interval), environmental contamination, nutrition, injury, personal illness, as well as health service availability and its utilization (Li, et al., 2017; Macinko, de Fátima Marinho de Souza, Guanais, & da Silva Simões, 2007; Mosley & Chen, 1984).

Aiming to bring health service closer to the community, in many developing countries, community-based health service or program has been implemented. While evidence shows various level of success, community-based program is shown as a potential strategy to improve child health status (Boone, et al., 2017; Borrow, Munns, & Henderson, 2011; Cofie, et

al., 2014; Gilmore & McAuliffe, 2013; Macinko, et al., 2007; Nkonki, Tugendhaft, & Hofman, 2017; Odaga et al., 2016; Setiawan, Dignam, Waters, & Dawson, 2016). In Indonesia, the integrated health post for maternal and child health (posyandu) has been nationally endorsed since 1984, as a community-based health program implemented at village level. Posyandu is a form of community empowerment, which its implementation requires collaboration involving Health Office and local government at the sub-district level (Kementerian Kesehatan Indonesia & Pokjanal Posyandu, 2011). Posyandu is mainly operated by the Community Health Worker (CHW), who is a member of the community and received training to provide basic health service and deliver health promotion to the targeted community (Kementerian Kesehatan Indonesia, 2012). Posyandu for maternal and child health service has five main activities, including integrated maternal and child health service, nutrition program, family planning, immunization, and diarrhea control and prevention (Kementerian Kesehatan Indonesia & Pokjanal Posyandu, 2011).

Despite the nationwide implementation of posyandu for child health in the past decades, evidence related to its activities is lacking. Hence, this study aimed to explore the current implementation of posyandu for child health program in Indonesia, including the resources, activities, and challenges in implementing the program. Finding arose from the study could serve as an evidence for better posyandu implementation. Further, it could also provide a lesson learned for stakeholders such as community nurses in endorsing other programs with similar approach in the community, such as non-communicable disease, and ageing health.

## Methods

The study analyzed community component survey of the fifth wave of Indonesia Family Life Survey (IFLS-5) (RAND, 2016), conducted in 2014/2015. IFLS is a longitudinal study conducted by RAND in collaboration with va-

rious institutions in Indonesia across the waves. IFLS-5 was conducted in collaboration with Survey METRE. The survey had two components, a household-based survey, and community facility survey, assessing public facilities available in the area where the household survey's participants resided. In this study, a data of off all posyandu surveyed in IFLS-5 were analyzed.

Variables related to activities conducted in the past years, posyandu's human resources, financial resources, and perceived challenges in implementing the activity were selected and analyzed Applying a chi-square and independent t-test method, the results were compared for urban and rural to assess the disparities between both areas.

## Results

A total of 638 posyandu surveyed in IFLS-5 were included in the analysis (67% are located in urban, and 33% are located in rural areas), with 50% of posyandu in both areas were firstly operated between the year 1981 to 1995.

Table 1 presents type of activities conducted by posyandu in urban and rural areas. During the past 12 months prior to the survey, posyandu in both urban and rural areas have conducted various activities for child health program.

In average, there were more type of activities conducted in rural than in urban areas (Mean= 8.1 in rural vs 7.4 in urban,  $p < 0.001$ ).

The proportion of posyandu delivering community services for maternal care, such as Ante Natal Care and Fe supplementation were slightly over 60% (61% for ANC and 64% for Fe supplementation), with more posyandu in rural provided the service than in urban areas ( $p < 0.001$ ). Meanwhile, the proportion of posyandu that provide services for child health care – except for those related with therapy and medication was ranging from 82% (immunization) to 99.5% (weight monitoring).



Table 1. Activities Conducted by Posyandu during the Past Year

Types of activity in the past year	Proportion (%)			X <sup>2</sup> or t	p
	Urban	Rural	Total		
Child growth and development	83.2	84.8	83.7	0.259	0.611
Weighting	99.8	99.1	99.5	1.555	0.212
Supplementary meals provision	96.7	90.0	94.5	12.303	<0.001
Immunization	77.3	91.0	81.8	17.557	<0.001
Maternal and child health care	73.1	81.4	75.9	5.297	0.021
Ante Natal Care	53.0	77.1	61.0	34.401	<0.001
Fe supplementation	57.7	76.7	64.0	21.959	<0.001
Vitamin A supplementation	98.1	97.6	98.0	0.185	0.667
ORS therapy	64.0	66.2	64.7	0.2911	0.590
Medication	33.2	51.0	39.0	18.704	<0.001
Total activities in the past years - Mean(SD)	7.4 (1.9)	8.1 (1.9)	7.6 (2.0)	-4.814	<0.001

Table 2. CHW's Characteristics Running the Activities in Posyandu

Human Resources	Proportion (%)			X <sup>2</sup> or t	p
	Urban	Rural	Total		
Number of CHW - Mean(SD)	4.23 (2.90)	3.19 (2.07)	3.95 (2.74)	10.305	<0.001
Ever received any related training	62.8	60.5	62.2	1.588	0.208
Last training received (in years - Mean(SD))	3.29 (3.09)	3.14 (2.82)	3.25 (3.08)	0.836	0.403
Last training on child health received (in year - Mean(SD))	3.28 (3.51)	2.91 (2.52)	3.16 (3.22)	1.835	0.067
<b>CHW's education attainment</b>				93.956	<0.001
Primary school or lower	13.1	23.5	15.9		
Junior high school	25.2	27.7	25.9		
Senior high school	51.5	40.6	48.6		
Academy/ university	9.3	5.9	8.4		
<b>Gender</b>				15.579	<0.001
Man	1.5	3.6	2.0		
Woman	98.5	96.5	98.0		

Weight monitoring (weighting) and supplementary meals provision were two activities that have been conducted by nearly all posyandu in both areas. In total, there were more posyandu implemented services related to child-care than maternal care. On the contrary, services related to medication and therapy were the least activities conducted by posyandu in

both areas. The proportion of posyandu that provided medication and ORS therapy were 39% (51% in rural vs. 33.2% in urban,  $p < 0.001$ ) and 64.7% (66.2% in rural vs 64% in urban,  $p > 0.05$ ), respectively.

The study assessed posyandu's resources in implementing its activities. This include human

resources – conditions of the community health worker (CHW) running the activities, financial resources, and logistic issues. Table 2 shows the current conditions of CHWs running the activities in urban and rural areas.

As shown, the average number of CHWs in each posyandu located in urban areas was significantly higher than rural areas (4.2 vs. 3.2,  $p < 0.001$ ).

Compared to the posyandu's located in rural areas, there were more CHWs who were senior high school graduate in urban areas (51.5% vs. 40.6%,  $p < 0.001$ ).

The proportion of CHWs who have ever received posyandu's related training was 62.2%, and among those who have received training, the average of last training on posyandu and child health received by the CHWs were 3.25 and 3.16 years ago, respectively. No significant difference was found between urban and rural areas in regards to CHW's training.

As shown in Figure 1, during the past year, most of posyandu's activities were funded by the health center budget, in both urban and ru-

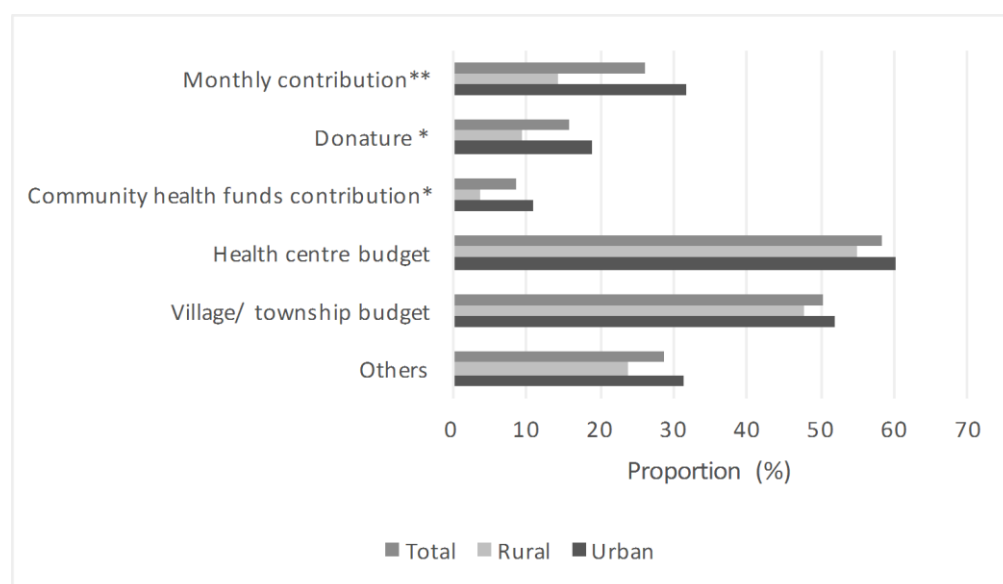
ral areas. Compared to rural areas, there were more posyandu located in urban areas which received donation and contribution, both from the community members and community health funds ( $p < 0.05$ ). Meanwhile, there were less than 50% posyandu located in the rural areas which received the fund to conduct their activities.

Table 3 shows the problems in posyandu's operation during the past 12 months as perceived by the CHW's coordinator participated in this survey. In general, the problems faced by posyandu in both areas were lack of operational funding (57.7%), equipment (37.0%), and location to conduct the activities (27.1%) – there were significantly more posyandu in rural than urban areas that experienced challenges related to financial resources and equipment ( $p < 0.05$ ).

Further, as shown, perceived lack of community participation has also been a problem faced by nearly 22% of posyandu—with no significant differences between urban and rural areas.

Approximately 20% and 37% of posyandu in both areas faced problems related to medicine

Figure 1. Source of Funding to Run Posyandu in the Past Year, by Area

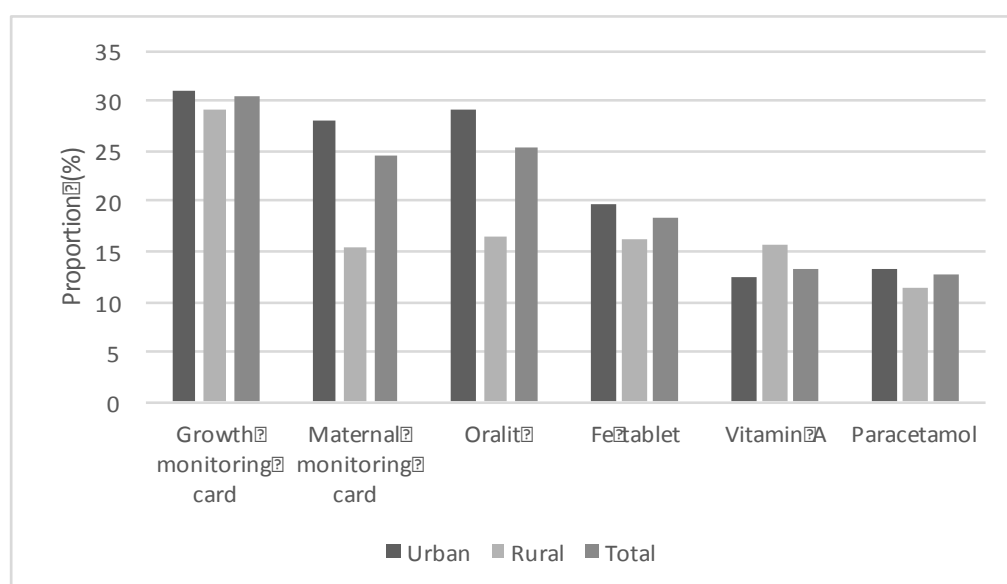


\* $p < 0.05$ ; \*\* $p < 0.001$

Table 3. Challenges in Posyandu's Operation as Expressed by The CHW's Coordinator, by Area

Problems	Proportion (%)			X <sup>2</sup>	p
	Urban	Rural	Total		
Lack of operational funding	53.3	66.7	57.7	10.356	0.001
Medicine supplies	20.1	18.6	19.6	2.072	0.649
Equipment supplies	33.9	43.3	37.0	5.403	0.020
Human resource	10.3	20.0	13.5	11.412	0.001
Lack of CHC's support	4.7	8.1	5.8	3.02	0.082
Lack of support from village/ township	8.6	11.0	9.4	0.88	0.348
Location to conduct activities	25.7	30.0	27.1	1.317	0.251
Lack of community participation	22.4	19.5	21.5	0.706	0.401
Others	6.5	5.7	6.3	0.164	0.685

Figure 2. Proportion of Posyandu that Experienced Supplies Out of Stock, by Type of Supply, by Area



and equipment supplies. As shown in Figure 2, despite the priority in child health program, more than 30% of posyandu had ever experienced running out of growth monitoring card in the past 12 months. Meanwhile, the proportion of posyandu in urban areas that have ever ran out of *oralit* for diarrhea therapy was nearly doubled those in the rural areas (29% in urban vs 16% in rural,  $p < 0.05$ ).

## Discussion

This study explored the current implementation of posyandu located in 13 provinces, surveyed

in IFLS-5. We explored the activities implemented by posyandu in the past year prior to the survey related to maternal and child health, available resources, and challenges in the implementation.

**Implemented Activities.** Community-based health service implementation in limited resource setting has shown a promising result in improving child health outcomes (Andriani, Liao, & Kuo, 2016; Anwar, Khomsan, Sukandar, Riyadi, & Mudjajanto, 2010; Besada, et al., 2016; Boone, et al., 2017; Brault, et al., 2017; Cofie, et al., 2014; Kipp, et al., 2017; Setiawan,

et al., 2016). Among other factors, it is related to an increased access to child health care resulted from the program implementation (Brault, et al., 2017; Cofie et al., 2014).

Posyandu is one of community-based health service implemented in Indonesia. It's main activities include integrated maternal and child health, family planning, immunization, nutrition program, and diarrhea control (Kementerian Kesehatan Indonesia, 2012). This study shows that activities related to child health care were prioritized by posyandu. Nearly all posyandu in both urban and rural had conducted activities such as weighting, supplementary meals provision, and vitamin A supplementation. This finding indicates the potential of posyandu to improve child health status, particularly for early detection of malnourished child, hence reduce the burden of malnutrition. Nevertheless, an integrated maternal and child health care has not been provided by all posyandu being surveyed, which may hinder the effectiveness of the program itself. Previous studies shown the positive association between posyandu activities and child nutrition status (Andriani, et al., 2016; Anwar, et al., 2010). The availability and participation in posyandu's activities have been indicated to positively impact on child nutrition status, in both reducing underweight (Anwar, et al., 2010) and odds for childhood obesity (Andriani, et al., 2016).

In average, posyandu located in rural areas conducted more type of activities than those located in urban areas. The finding might indicate a more important role of posyandu in rural areas to outreach the community, and improving access to health care.

**Resources.** This study examines human and non-human resources owned by posyandu during the past year prior to the survey. In contrast with a higher number of activities conducted by posyandu in rural areas, many posyandu in the areas were served by less than a required of four CHWs per posyandu. This figure was lower than those in urban areas,

which may indicate a higher working load experienced by CHWs in rural areas.

Further, the capacity of CHWs may also be lacking as not all CHWs have ever received training related to posyandu and/ or childcare. Should posyandu is expected to achieve a significant impact in improving child health outcomes, it is essential to address this issue. Supported by the community health center, CHWs are the front liner in posyandu's implementation. CHWs have significant role in preparing posyandu's activities, during the day of implementation itself, as well as performing follow up the day after. Their responsibilities not solely on assisting health workers in health service provision but also in posyandu management, reporting, and more importantly liaise with the society and community leader (Kementerian Kesehatan Indonesia, 2012). Evidence has shown that health interventions delivered by CHWs in LMICs were effective, not only for health promotion delivery, but also to reduce burden of malaria, promoting breastfeeding, essential newborn care, and psychosocial support (Cofie et al., 2014; Gilmore & McAuliffe, 2013; Agus Setiawan & Dawson, 2017; Uzundu, Doctor, Findley, Afenyadu, & Ager, 2015). In addition, it is also shown that collaboration between community leader and CHWs is essential to overcome cultural barriers in community-based health service (Cofie, et al., 2014).

In addition to a form of community-based health service, posyandu is envisioned as a community empowerment activity, aiming to involve community to be actively participated in public health (Kementerian Kesehatan Indonesia & Pokjanal Posyandu, 2011). As a consequence, posyandu's management including it's operational funding, is a shared responsibility between government and community, including private sector and non-government organization. This study identifies various sources for posyandu's operational cost in the past year, comprising monthly contribution, donator, health center budget, and village/ township budget.

There were more posyandu in urban areas who received the funds from all categories, compared to those in rural areas. It is worth to notice that despite the availability of village fund that can be allocated to support posyandu, there were less than 50% of posyandu in rural areas which received such funding. This may indicate a lack of priority given by the local government/ village leader on posyandu's activity. Should the condition continue, this would become a great barrier in posyandu's implementation in rural areas.

**Problems in Posyandu Implementation.** While Indonesia has implemented posyandu for decades, there were remaining challenges faced by posyandu participated in the survey. Problems such as insufficient operational funding, lack of equipment supplies, and difficulties in finding location to conduct such activities remained as the challenges faced the most by posyandu. We suggest that the problems were intertwined and cannot be addressed separately. It is possible that the insufficient financial resources for posyandu was the bottleneck leading to other problems faced by posyandu, such as problems in medicine, equipment supplies, lack of CHW's capacity (related to inadequate training), and infrastructure. The problems found to be similar with posyandu's for other health program, and may, in turn, lead to ineffective program's implementation (Christiani, Byles, Tavener, & Dugdale, 2016).

Posyandu is a collaborative program between village office, posyandu working group, community health center, and the societies (Kementerian Kesehatan Indonesia & Pokjanel Posyandu, 2011). Ideally, these actors should collaborate in posyandu implementation, with technical supervision being the responsibility the community health center. Nevertheless, the study find support from village office and community health center were lacking for some posyandu, in both urban and rural areas. Combine with other problems described above; this circumstances will affect the performance of CHW's performance, which in turn leads to

ineffective implementation of posyandu, including poor participation rate in the activities (Jaskiewicz & Tulenko, 2012). Other than this issue, the apparent lack of community participation in posyandu activities may relate to poor health-seeking behavior, lack of health knowledge, and other activities perceived as more important than attending posyandu (Adekanmbi, Adedokun, Taylor-Phillips, Uthman, & Clarke, 2017; Anwar et al., 2010).

**Strength and Limitation.** This study analyzed the current situation of posyandu surveyed in IFLS-5. The characteristics, resources, and problems faced by posyandu explored in this study were limited to those assessed in the survey, which were fully relying on participants' response and not confirmed by other sources, such as posyandu's report, and others. Despite its limitation, this study provides a current picture of posyandu's implementation for maternal and child health in 13 most populated provinces in Indonesia. The finding can serve as a basis for other studies further exploring the situation and lesson learnt for other communitybased service in Indonesia.

## Conclusion

The study provides a general description on current implementation of posyandu for maternal and child health in 13 most populated provinces in Indonesia. Despite its potential contribution in improving child health outcomes in the country, the finding shows that posyandu's implementation has not been optimal. Classical problems such as financial barriers, human resource capacity, medicine and equipment supplies, and inadequate collaboration between the related sectors were remained, in both urban and rural areas. Should posyandu be expected as one of front liner in child health program, urgent actions should be taken by the related sector. First, collaboration between related sectors should be improved. Financial barriers were indicated as a bottleneck in hindering posyandu's effectiveness as it may lead to other problems. As posyandu is



a collaborative program between health and non-health sector, source of potential funding should be identified by the related sectors. Further, the village office and posyandu working group should take a responsibility to govern the posyandu, and not merely rely on community health centre. Second, community's awareness on the importance of posyandu's activities for maternal and child health should be increased. The roles of CHW's and other society groups are becoming important in this matter. As part of the community, CHWs and society groups are in the best position to promote this program. This is not solely related to community's trust but also due to their deeper understanding on the local context, including cultural and behaviors. Third, in relation to that, it is important to invest in CHWs training to build their capacity in running posyandu. Regular refresher training for CHWs were also worth to be considered, with training materials and delivery customized with the local needs, and CHWs education background (DW, INR, PN).

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